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FEDERAL - STATE COOPERATIVE
SNOW SURVEYS and WATER SUPPLY FORECASTS
for

MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE···SOIL CONSERVATION SERVICE.
and
MONTANA AGRICULTURAL EXPERIMENT STATION

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In cooperation with the U. S. Forest Service, U. S. Geological Survey, National Park Service, U. S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and local Organizations.

AS OF
FEB. 1, 1957

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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS

Snow surveys in the west are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summarizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the Soil Conservation Service, U. S. Department of Agriculture and some of its cooperators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section
Soil Conservation Service
209 S. W. 5th Avenue
Portland 4, Oregon

BASIN REPORTS:

Colorado, Rio Grande, and Platte-Arkansas River Basins	Issued monthly February through May by SCS and Colorado Experiment Station, Fort Collins, Colorado.*
Columbia River Basin	Issued monthly January through May by Soil Conservation Service, Boise, Idaho.*
Upper Missouri River Basin	Issued monthly February through May by SCS and Montana Agricultural Experiment Station, Bozeman Montana.*
West-Wide Water Supply Outlook	Issued April 1 by Soil Conservation Service and Cooperators, Portland, Oregon.

STATE REPORTS:

Arizona	Issued semi-monthly January 15 through April 1 by SCS and Salt River Valley Water Users Association, Phoenix, Arizona.*
Nevada	Issued monthly February through April by SCS and Nevada State Engineer, Reno, Nevada.*
Oregon	Issued monthly January through May by SCS, Portland, Oregon, and Oregon Agricultural Experiment Station.*
Utah	Issued monthly January through May by SCS, Salt Lake City, Utah, and State Engineer of Utah and Utah Agricultural Experiment Station.*
Washington	Issued monthly February through May by SCS, Spokane, Washington, and State Department of Conservation and Development.*
Wyoming	Issued monthly February through May by SCS, Casper, Wyoming, and State Engineer of Wyoming.*

*Special reports are issued as needed.

The British Columbia reports are issued February 1 through June 1 and may be secured from Comptroller, Water Rights Branch, Department of Lands and Forests, Parliament Building, Victoria, B. C.

The California reports are issued monthly February 1 through May 1 and may be secured from Division of Water Resources, California Department of Public Works, Sacremento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly bulletins published from January through May. These bulletins entitled, "Water Supply Forecasts for the Western United States" may be obtained from River Forecast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6, Missouri.

FEDERAL - STATE COOPERATIVE

SNOW SURVEYS and WATER SUPPLY FORECASTS

for

MONTANA AND NORTHERN WYOMING

(Upper Missouri and Upper Columbia River Basins)

Report Prepared by:

A. R. Codd
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and
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Irrigation Engineer
Montana Agricultural
Experiment Station

Soil Conservation Service
U. S. Department of Agriculture
and
Montana Agricultural Experiment Station
Bozeman, Montana

Report issued by:

Truman C. Anderson
State Conservationist
of Montana

M. M. Kelso, Director
Montana Agricultural
Experiment Station

WATER SUPPLY OUTLOOK
as of
FEBRUARY 1, 1957

Snow surveys made for February 1, 1957 show considerable improvement over January first measurements. The present snow cover is generally at the average point with a few places slightly higher. The water content is considerably less than last year but higher than the year before last.

Surface water runoff reported was below average due to ice storage and recession of ground water supplements.

Irrigation reservoirs showed a slight gain and are close to the average stage for the first of February.

MADISON RIVER:

The seven snow courses measured in and near the headwaters of the Madison River basin showed an average of ten and one-half inches of water content. This figure is 71 per cent of last year's February pack, but 160 per cent of the 1955 water content and 110 per cent of the average amount over the past 15 years. The 1955 April-September stream flow of the Madison was 85 per cent average.

GALLATIN RIVER:

The 1957 snow pack on the headwaters of the Gallatin River is close to average for February first. Here again the snow pack is 34 per cent less than 1956 and 102 per cent average. This year's pack is considerably greater than the 1955 February pack.

MISSOURI RIVER MAIN STEM:

The February first snow pack on the tributaries to the Missouri from Toston to Fort Benton is 62 per cent of last year and only 87 per cent of average. In the mountains around Helena and to the north the snow pack is below average by 12 per cent. When more courses are measured on March and April a better estimate will be available.

UPPER YELLOWSTONE RIVER:

The February first 1957 snow pack in Yellowstone Park is 54 per cent of last year, which was particularly heavy. The present snow pack is 98 per cent of the 15-year average. Providing a normal accumulation of snow occurs during the rest of the season, stream flow should be adequate.

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COLUMBIA BASIN

FLATHEAD RIVER:

The February first snow pack is 94 per cent of the average accumulation. Compared to last year, the present pack is 80 per cent as much; however, we have 59 per cent more than 1955. The April-September flow in 1955 was 102 per cent average and the same period flow in 1956 was 125 per cent average. Valley precipitation on this basin during the fall months of September, October and November was 1.54 inches below average, but during December and January, precipitation has been about average.

CLARK FORK RIVER:

In the vicinity of Missoula and above, the snow pack this season is not as large as last season by 64 per cent and is 90 per cent of average. However, there is about 50 per cent more water content than in 1955. Good storms during February and March should produce a normal or better runoff during the April-September period. Fall and winter precipitation in the valley has been below average.

INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates	Measured By
MISSOURI RIVER DRAINAGE								
JEFFERSON RIVER								
(ROCK-BEAVERHEAD)								
Lakeview Ridge	11E3	7400	27	14S	2W	1948	3,4,5	10
Lakeview Canyon	11E4	6930	26	14S	2W	1948	3,4,5	10
Limekiln	12E2	6950	5	15S	9W	1948	3,4	1
White Pine Ridge	12E1	8850	18	14S	9W	1948	3,4	1
(NORSE PRAIRIE)								
Bloody Dick	13D10	7600	12	8S	16W	1948	3,4	1
Gold Stone	13D9	8100	11	8S	16W	1948	3,4	1
Lemhi Pass	13E1	7480	9	10S	15W	1948	3,4	1
Terrell Creek	13D12	6650	14	9S	15W	1948	3,4	1
Trail Creek	13E2	7090	15	10S	15W	1948	3,4	1
Selway Junction	13D11	6800	27	8S	15W	1948	3,4	1
(BIG HOLE)								
Big Hole Pass	13D3	7400	28	3S	18W	1948	3,4	1
Big Hole Pass-Be.	13D4	6900	24	3S	18W	1948	3,4	1
East Boundary	13D5	6700	22	3S	17W	1948	3,4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	1,3
Jahnke Creek	13D8	7340	25	7S	16W	1948	3,4	1
Miner Forks	13D6	7300	24	6S	17W	1948	3,4	1
Miner Lake	13D7	6720	10	6S	16W	1945	3,4,5	1
(WISE RIVER)								
Anderson Mdw.	13D14	7000	18	3S	12W	1948	3,4	1
Elk Horn	13D15	8450	15	4S	12W	1934	3,4,5	3
Wise River	13D13	6300	15	2S	12W	1948	3,4	1
(RUBY RIVER)								
Cottonwood	11E2	5900	24	10S	3W	1948	3,4	1
Cottonwood (Upper)	11E1	8400	30	10S	2W	1948	3,4	1
Flashlight	12D3	6950	22	8S	7W	1945	3,4,5	1
Tobacco Root	12D2	6900	13	4S	4W	1948	3,4	1
Vigilante	11D1	6125	28	9S	3W	1948	3,4	1
MADISON RIVER								
Hebgen	11E5	6550	22	11S	3E	1934	1,2,3,4,5	3
West Yellowstone	11E7	6700	34	13S	5E	1934	1,2,3,4,5	3
Norris Basin	10E2	7500	44°-42'		110°-42'	1935	3,4	6
GALLATIN RIVER								
Devil's Slide	10D4	6100	14	5S	6E	1935	2,3,4,5	2,1
Hood Meadow	10D3	6600	22	4S	6E	1934	2,3,4,5	2,1
Mystic Lake	10D2	6600	30	3S	7E	1935	2,3,4	7
New World	10D1	6700	24	3S	6E	1939	1,2,3,4,5	7
21-Mile	11E6	7150	1	11S	5E	1934	1,2,3,4,5	3
MISSOURI RIVER MAIN STEM								
Chessman Reservoir	12C5	6200	2	8N	5W	1936	1,2,3,4,5	3
Crystal Lake	9C1	6100	19	12N	18E	1941	3,4	1,2
Grasshopper	10C2	7000	19	9N	8E	1938	3,4	2
Kings Hill	10C1	7950	35	13N	7E	1937	3,4,5	3
Picnic Grounds	12C6	6500	10	5N	6W	1940	2,3,4	4
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	1
Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	3
Ten Mile Creek L	12C2	6250	13	8N	6W	1935	1,2,3,4,5	3
Ten Mile Creek M	12C3	6800	13	8N	6W	1934	1,2,3,4,5	3
Ten Mile Creek U	12C4	8000	19	8N	5W	1935	1,2,3,4,5	3
(TETON RIVER)								
Freight Creek	12A1	6000	13	26N	10W	1948	3,4	1
Waldron Creek	12B2	5600	16	25N	9W	1948	3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	1
(SUN RIVER)								
Benchmark	12B8	5500	9	20N	10W	1948	3,4	1
Cabin Creek	12B6	5400	33	23N	10W	1949	3,4	1,2
5-Bull	12B9	5600	36	20N	10W	1948	3,4	1,2
Gates Park	12B5	5300	31	24N	10W	1949	3,4	1,2
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4	3
Wrong Ridge	12B3	6800	17	25N	10W	1949	3,4	1,2
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4	1,2
(MARIAS RIVER)								
Marias Pass	13A5	5250	34	30N	14W	1936	1,2,3,4,5	3
(MILK RIVER)								
Rocky Boy	9A1	5200	15	28N	16E	1941	3,4	7
(MUSSELSHELL RIVER)								
Grasshopper	10C2	7000	19	9N	8E	1938	3,4	2
MISSOURI RIVER DRAINAGE (cont.)								
(UPPER YELLOWSTONE)								
Camp Senie	9D1	7890	2	8S	18E	1937	4	1
Canyon	10E3	7750	44°-44'		110°-30'	1938	1,2,3,4,5	6
Cooke City	10D7	7400	25	9S	14E	1937	1,2,3,4,5	6
Crevice Mt.	10D5	8400	22	9S	9E	1935	3,4	2
Independence	10D6	8000	22	7S	12E	1941	3,4	1
Lake Camp	10E4	7850	44°-34'		110°-24'	1937	1,2,3,4,5	6
Lupine Creek	10E1	7300	44°-54'		110°-37'	1938	1,2,3,4,5	6
Lodgepole	9E1	8200	32	56N	106W	1940	2,3,4,5	1,4
(SHIELDS RIVER)								
Porcupine	10C3	6500	10	4N	10E	1938	3,4	1
LOWER YELLOWSTONE								
(WIND RIVER) Wyoming								
Big Warm	9F12	8800	36	42N	109W	1955	2,3,4,5	1
Brooks Lake #3	10F8	9200	23	44N	110W	1939	2,3,4,5	1
Burroughs Creek	9F4	8800	15	43N	107W	1948	2,3,4,5	1
Dinwoodie	9F10	10000	21	39N	105W	1948	2,3,4,5	1
Dry Creek	9F9	9500	34	4N	6W	1948	2,3,4,5	1
DuNoir	9F6	8750	27	42N	108W	1940	2,3,4,5	1
East Fork	9F13	9200	23	44N	104W	1956	2,3,4,5	1
Geyser Creek	9F7	8500	12	41N	108W	1948	2,3,4,5	1
Little Warm	9F8	9500	24	41N	108W	1948	2,3,4,5	1
Sheridan R.S. #1	9F5	7500	3	42N	109W	1939	2,3,4,5	1
Sheridan R.S. #2	9F14	7500	3	42N	109W	1955	2,3,4,5	1
T-Cross Ranch	9F3	8000	1	43N	107W	1940	2,3,4,5	1
Togwotee Pass	10F9	9600	29	44N	110W	1936	2,3,4,5	11
(POPO AGIE RIVER) Wyoming								
Blue Ridge	8G2	9500	23	31N	101W	1939	2,3,4,5	1
Bruce's Camp	8G5	6500	24	32N	101W	1955	2,3,4	1
Nobb's Park	9G3	10000	22	2S	3W	1948	2,3,4,5	1
Mosquito Park R.S.	9G4	9500	23	2S	3W	1940	2,3,4,5	1
Sawmill Glade	8G1	8500	3	31N	101W	1939	2,3,4,5	1
South Pass	8G3	9000	13	30N	101W	1939	2,3,4,5	1
St. Lawrence	9F11	9000	26	1N	4W	1940	2,3,4,5	1
Trout Creek	9G2	8400	5	2S	2W	1948	2,3,4,5	1
(OWL CREEK) Wyoming								
Beavers Mill	9F2	8900	6	43N	102W	1948	2,3,4,5	1
Owl Creek	8F1	8700	36	43N	101W	1948	2,3,4,5	1
(GREYBULL RIVER) Wyoming								
Timber Creek #1	9E2	8800	25-	47N	103W	1948	2,3,4,5	1
Timber Creek #2	9E3	8800	25	47N	103W	1955	2,3,4,5	1
Wood River #1	9F1	8000	28	46N	103W	1939	2,3,4,5	1
Wood River #2	9F15	8000	28	46N	103W	1956	2,3,4,5	1
(SHOSHONE RIVER) Wyoming								
East Entrance	10E6	7000	17	52N	109W	1948	1,2,3,4,5	6
Sylvan Pass	10E5	7100	12	52N	110W	1936	1,2,3,4,5	6
(NOWOOD CREEK) Wyoming								
Cold Springs Camp	7E25	8700	1	50N	88W	1956	2,3,4,5	1
Medicine Lodge Lks	7E24	9500	7	51N	87W	1956	2,3,4,5	1
Munkers Pass	7E8	9700	11	48N	85W	1950	2,3,4,5	1
North Powder	7E36	8300	20	47N	85W	1956	2,3,4,5	1
Onion Gulch	7E27	8100	31	48N	85W	1956	2,3,4,5	1
Tensleep Lake	7E26	9075	33	50N	86W	1956	2,3,4,5	1
Tensleep R.S.	7E7	8300	30	49N	86W	1935	2,3,4,5	1
Tyrell R.S.	7E35	8300	30	49N	86W	1956	2,3,4,5	1
(SHELL CREEK) Wyoming								
Bald Mountain	7E21	9600	33	56N	91W	1956	2,3,4,5	1
Beaver-Tongue Div.	7E20	9200	12	55N	91W	1956	2,3,4,5	1
Bone-Spring Div.	7E18	9200	32	55N	89W	1956	2,3,4,5	1
Granite Creek Camp	7E22	7800	15	53N	89W	1956	2,3,4,5	1
Granite Pass	7E17	8950	19	54N	88W	1956	2,3,4,5	1
Horse-Trail Div.	7E19	9200	29	55N	90W	1956	2,3,4,5	1
Ranger Creek	7E4	8800	32	53N	88W	1935	2,3,4,5	1
Shell Creek	7E23	9600	12	52N	88W	1956	2,3,4,5	1
(PORCUPINE CREEK) Wyoming								
Five Spgs. Fells	7E31	7500	19	56N	92W	1956	2,3,4,5	1
Medicine Wheel	7E30	9000	24	56N	92W	1956	2,3,4,5	1
(TONGUE RIVER) Wyoming								
Beaver Tongue Div.	7E20	9200	12	55N	91W	1956	2,3,4,5	1
Big Goose #1	7E2	7700	4	53N	86W	1935	2,3,4,5	1
Big Goose #2	7E32	7700	4	53N	86W	1955	2,3,4,5	1
Bone-Spring Div.	7E18	9200	32	55N	89W	1956	2,3,4,5	1
Burgess R.S. #1	7E1	7900	36	56N	89W	1950	2,3,4,5	1
Burgess R.S. #2	7E33	7900	36	56N	89W	1955	2,3,4,5	1
Dome Lake #1	7E3	8800	11	53N	87W	1950	2,3,4,5	1
Dome Lake #2	7E34	8800	11	53N	87W	1950	2,3,4,5	1
Gloom Creek	7E14	9300	32	55N	87W	1956	2,3,4,5	1
Granite Pass	7E17	8950	19	54N	88W	1956	2,3,4,5	1
MISSOURI RIVER DRAINAGE (cont.)								
(TONGUE RIVER cont.)								
Horse Trail Div.	7E19	9200	29	55N	90W	1956	2,3,4,5	1
Lake Geneva	7E16	9000	7	52N	86W	1956	2,3,4,5	1
North Tongue	7E15	8800	17	55N	89W	1956	2,3,4,5	1
Sibley Lake	7E11	8000	10	55N	88W	1956	2,3,4,5	1
Sucker Creek	7E12	9000	19	55N	87W	1956	2,3,4,5	1
Steamboat Point	7E10	7500	32	56N	87W	1956	2,3,4,5	1
Wood Rock G.S.	7E13	8500	3	54N	88W	1956	2,3,4,5	1
(POWDER RIVER) Wyoming								
Crazy Woman	6E2	8200	6	47N	84N	1956	2,3,4,5	1
Muddy Creek G.S.	6E1	7800	2	48N	84N	1956	2,3,4,5	1
Munkers Pass	7E8	9700	11	48N	85W	1950	2,3,4,5	1
North Powder #2	7E36	8300	20	47N	85W	1956	2,3,4,5	1
Onion Gulch	7E27	8100	31	48N	85W	1956	2,3,4,5	1
Soldier Park	7E5	8700	36	51N	85W	1950	2,3,4,5	1
Sour Dough	7E6	8500	17	49N	84W	1936	2,3,4,5	1
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5½	2
Blue Bird Basin	14A1	6800	24	37N	26W	1937	4,5,5½	1,2
Red Mountain	15A1	6000	4	36N	29W	1937	3,4,5,5½	1,2
Weasel Divide	14A7	5450	8	37N	24W	1955	4,5,5½	1,2
FLATHEAD RIVER								
Basin Creek	13B14	5000	11	19N	12W	1951	2,3,4,5	2
Big Creek	13B3	6750	6&7	22N	18W	1941	3,4,5	5
Brush Creek	14A4	5000	13	30N	26W	1937	3,4,5	1,2
Cattle Queen	13A1	4700	7	35N	17W	1939	3,4,5	6
Desert Mountain	13A2	5600	24	31N	19W	1937	1,2,3,4,5	1,2
Hell Roaring Div.	14A3	5770	35	32N	22W	1942	3,4,5	1,2
Holbrook	13B13	4530	18	21N	13W	1951	1,2,3,4,5	2
Kishenehn	14A6	4000	14	37N	22W	1954	4,5	6
Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	2
Marias Pass	13A5	5250	34	30N	14W	1934	1,2,3,4,5	3
Quintonkon	13A13	3800	11	26N	17W	1951	2,3,4,5	1,2
Spotted Bear Mt.	13B2	7000	23	25N	15W	1948	3,4,5	1,2
Strawberry Lake	13A10	6500	11	28N	19W	1948	3,4,5	2
Trinkus Lake	13B1	6500	9	25N	17W	1948	3,4,5	2
Trout Lake	13A12	3600	21	28N	17W	1948	3,4,5	1,2
Twin Creeks	13B11	3580	14	26N	16W	1951	2,3,4,5	1,2
Upper Holland Lk.	13B5	7000	28	20N	16W	1948	3,4,5	2
CLARK FORK								
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5½	2
Coyote Hill	13B10	4200	12	18N	16W	1952	1,2,3,4,5	2
El Dorado Mine	13C9	7800	23	8N	12W	1946	4	1
Freezeout Summit	15B10	6800	21	15N	27W	1951	4,5	2
Gold Creek Lk.	13C10	7200	14	8N	12W	1946	4	1
Hoodoo Summit	15C1	6200	9&16	14N	27W	1937	4,5	2
Intergaard	13C4	6450	6	5N	13W	1939	2,3,4	4
Lubrecht Forest #6	13C8	5400	11	14N	15W	1951	1,2,3,4,5	12
North Fork Jocko	13B7	6330	3	17N	17W	1941	3,4,5	5
Picnic Grounds	12C6	6500	10	5N	6W	1940	2,3,4	4
Pipestone Pass	12D1	7200	11	1N	7W	1938	2,3,4,5	1
Slide Rock Mt.	13C2	7100	26	10N	16W	1937	4	1
Southern Cross	13C5	6500	8	5N	13W	1939	2,3,4	4
Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	3
Storm Lake	13C7	7780	19	4N	13W	1939	2,3,4	1
Stuart Mill	13C6	6500	19	5N	13W	1939	2,3,4	4
Stuart Mountain	13C1	7400	6	14N	18W	1936	4	1,2
TV Mountain	14B1	6800	33	15N	19W	1956	1,2,3,4,5	1
BITTERROOT RIVER								
East Fork R.S.	13D1	5400	16	2N	17W	1937	4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	3,1
Lolo Pass	14C5	5230	16	38N	15E	1956	3,4,5,5½	2
Mud Creek Pasture	14C1	4500	24	11N	24W	1937	3	1
Nez Perce Camp	14D2	5580	19&20	1S	23W	1937	3,4,5	1
Powell R.S.	14C6	4230	33	37N	14E	1956	3,4,5,5½	2
Skalkaho Summit	13C3	7259	30	6N	17W	1937	4	1
SASKATCHEWAN RIVER BASIN								
ST. MARY RIVER								
Josephine Upper	13A15	6000	48°-50'		113°-42'	1956	5	3,9
Josephine Lower #9	13A14	4900	48°-47'		113°-41'	1956	5	
Mount Allen #7	13A7	7000	48°-44'		113°-40'	1922	5	3,9
Piegan Pass #4	13A4	5000	48°-46'		113°-40'	1922	5	3,9
Piegan #6	13A6	6500	48°-45'		113°-42'	1922	5	3,9
Ptarmigan #8	13A8	5800	48°-50'		113°-42'	1922	5	3,9

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a. Numerals 1,2,3,4 and 5 refer to January 1, February 1, March 1, April 1 and May 1.

b. Numerals refer to Agency that secures the snow survey as follows:

1. Soil Conservation Service
2. U. S. Forest Service
3. U. S. Geological Survey
4. Montana Power Company
5. U. S. Indian Service
6. National Park Service
7. Montana Experiment Station
8. City of Bozeman
9. Dominion Water & Power Bureau
10. U. S. Fish and Wildlife Service
11. U. S. Bureau of Reclamation
12. Montana State Forestry School

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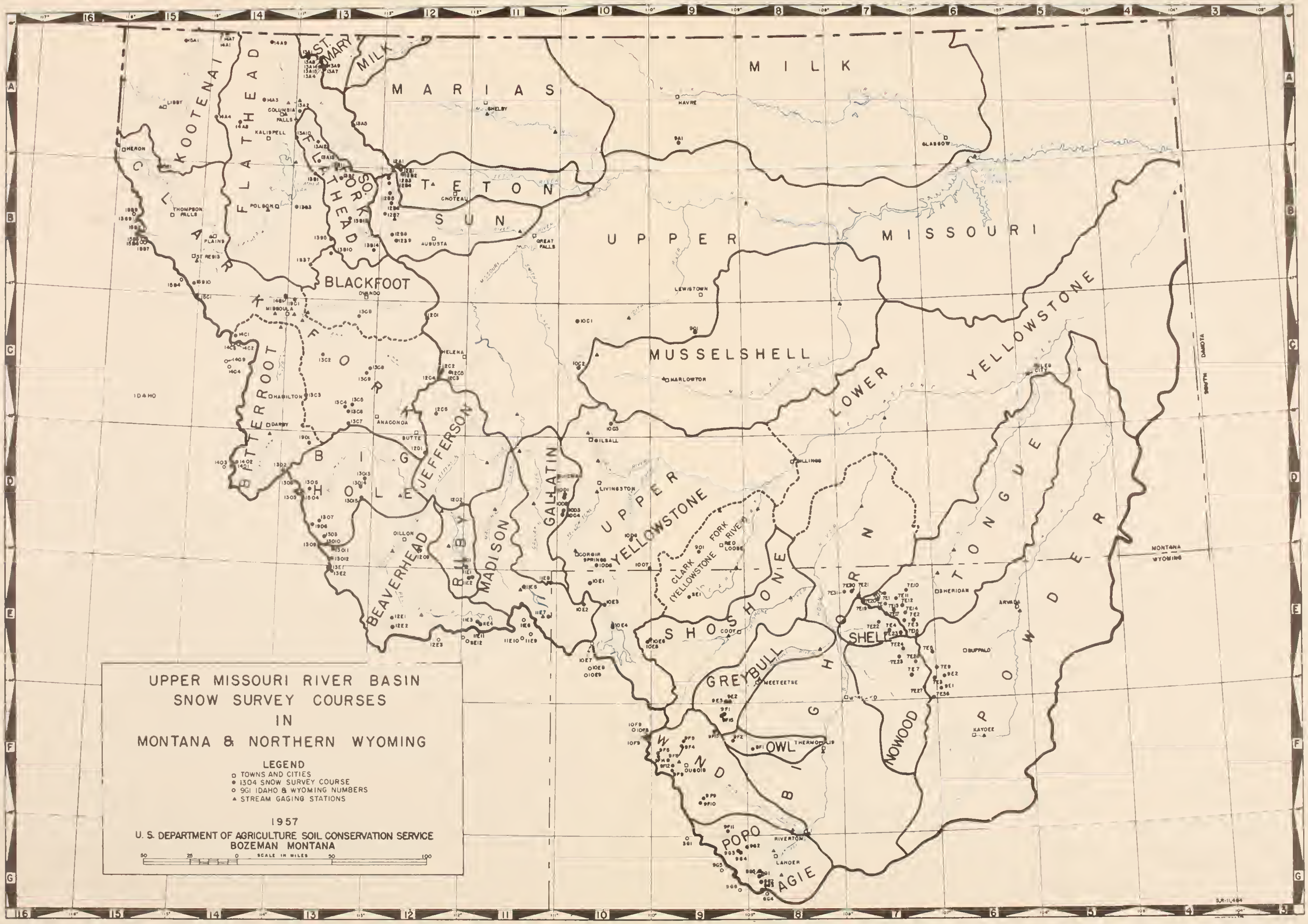

UPPER MISSOURI RIVER BASIN
SNOW SURVEY COURSES
IN
MONTANA & NORTHERN WYOMING

LEGEND
○ TOWNS AND CITIES
● 1304 SNOW SURVEY COURSE
○ 961 IDAHO & WYOMING NUMBERS
▲ STREAM GAGING STATIONS

1957

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
BOZEMAN MONTANA

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

Summary of snow survey data by tributary Watersheds February 1, 1957

TRIBUTARY BASINS	No. of Courses Averaged	No. Years Used 1938-52	Snow water equivalent 1957 expressed as per cent of		
			1956	1955	15-Yr. Avg. 1938-52
MISSOURI RIVER BASIN IN MONTANA					
MADISON RIVER (Montana)	7	6-15	71	160	110*
GALLATIN RIVER	2	9-15	68	165	102*
MISSOURI MAIN STEM	6	12-15	62	163	87*
UPPER YELLOWSTONE (Montana)	5	9-15	54	95	98*
COLUMBIA RIVER BASIN IN MONTANA					
KOOTENAI RIVER ABOVE LIBBY, MONT.	6	14-15	98	154	107*
FLATHEAD RIVER	8	4-15	79	159	94*
UPPER CLARK FORK	14	4-15	64	153	90*

*Average includes courses with less than 15 years of record in the 1938-52 period.

MONTANA SNOW SURVEYS - FEBRUARY 1, 1957

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						
			Date of Survey	1957 Snow Depth (In.)	Water Content (In.)	Past Record Water Content			Total Years of Record
						1956	1955	15-Year Average 1938-52	
JEFFERSON RIVER									
(Rock-Beaverhead)									
*Kilgore	11E12	6200	2/1	34	7.2	-	7.0	7.3	20
(Big Hole)									
Gibbons Pass	13D2	7100	1/31	64	14.8	22.7	7.6	14.8*	17
*Moose Creek	13D16	6200				15.0	5.9	10.0*	11
MADISON RIVER									
Hebgen	11E5	6550	1/27	42	10.0	10.6	5.9	7.6	22
W. Yellowstone	11E7	6700	1/27	38	9.1	12.7	5.3	7.8	19
21-Mile	11E6	7150	1/28	49	13.0	18.7	7.6	11.1	19
**Big Springs	11E9	6500	1/29	58	14.5	20.5	9.1	12.8	21
**Island Park	11E10	3600	1/28	48	10.4	17.8	7.8	10.1	21
**Valley View	11E8	6500	1/29	44	10.5	13.9	5.7	9.9#	11
Norris Basin	10E2	7500	2/1	37	6.6	9.9	4.5	7.7#	6
GALLATIN RIVER									
New World	10D1	6700	2/2	29	5.4	9.1	3.6	7.0#	9
21-Mile	11E6	7150	1/28	49	13.0	18.7	7.6	11.1	19
MISSOURI RIVER MAIN STEM									
Chessman Res.	12C5	6200	1/31	10	1.2	4.0	1.3	3.3	21
Picnic Grounds	13C6	6500	2/1	30	3.8	5.5	1.6	3.5#	12
Pipestone Pass	12D1	7200	1/29	18	3.2	5.8	1.6	3.0*	17
Tenmile, Lower	12C2	6250	2/3	25	4.4	6.1	2.5	4.8	21
Tenmile, Middle	12C3	6800	2/3	31	5.8	9.6	3.6	7.0	22
Tenmile, Upper	12C4	8000	2/2	35	7.7	11.9	5.4	8.8	22
(Marias River)									
Marias Pass	13A5	5250	1/30	44	12.2	13.3	6.4	11.8	22
UPPER YELLOWSTONE									
Canyon	10E3	7750	1/31	45	10.0	16.0	7.8	10.7#	11
Cooke City	10D7	7400	1/31	28	5.8	8.9	3.4	6.3#	10
Lake Camp	10E4	7850	1/31	31	6.0	15.0	3.2	6.9#	11
Lupine	10E1	7300	1/4	36	8.2	13.0	6.1	6.5*	15
**West Thumb Summit	10E7	7900	1/31	53	12.8	-	8.2	13.2#	9

*Average is for less than 15 years of record in the 1938-52 period.
**Adjacent Basin.
#Average for period of record.

MONTANA SNOW SURVEYS - FEBRUARY 1, 1957

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						Total Years of Record
			Date of Survey	1957 Snow Depth (In.)	Water Content (In.)	Past Record Water Content			
						1956	1955	15-Year Average 1938-52	
LOWER YELLOWSTONE (Wind River)									
Big Warm	9F12	8800	1/23	27	5.3	10.6	1.7	-	2
Brooks Lake	10F8	9200	1/22	51	12.6	23.8	9.7	17.2*	16
Burroughs Creek	9F4	8800	1/24	31	7.3	17.0	4.4	11.4#	8
Dinwoodie	9F10	10000	1/25	29	6.7	11.8	2.9	8.7#	8
Dry Creek	9F9	9500	1/25	18	3.5	7.6	1.7	4.6#	8
DuNoir	9F6	8750	1/23	22	4.5	8.9	1.0	6.7#	15
Geyser Creek	9F7	8500	1/23	20	4.2	8.9	1.4	5.6#	8
Little Warm	9F8	9500	1/23	38	9.3	17.9	5.0	12.8#	7
Sheridan R.S. #2	9F14	7500	1/22	23	4.2	8.3	2.3	-	2
T-Cross Ranch	9F3	8000	1/24	18	5.2	8.3	2.2	5.1*	16
Togwotee Pass	10F9	9600	1/22	67	16.9	29.4	11.6	19.2	21
LOWER YELLOWSTONE (Popo Agie River)									
Blue Ridge	8G2	9500	1/29	28	6.0	15.6	3.8	8.0*	15
Bruce's Camp	8G5	6500	1/29	5	0.6	0.8	-	-	1
Hobbs Park	9G3	10000	1/27	40	10.6	19.3	4.5	12.2#	8
Mosquito Park R.S.	9G4	9500	1/27	21	4.2	8.9	2.0	5.9*	13
Sawmill Glade	8G1	8500	1/29	21	4.1	8.0	2.2	5.1*	15
South Pass	8G3	9000	1/29	36	9.0	17.0	5.5	9.7	15
St. Lawrence R.S.	9F11	9000	1/26	19	3.6	8.9	1.3	5.0*	13
Trout Creek	9G2	8400	1/27	17	3.6	4.0	0.8	3.4#	8
LOWER YELLOWSTONE (Owl Creek)									
Beavers Mill	9F2	8900	1/31	17	3.2	7.2	3.8	5.5#	8
Owl Creek	8F1	8700	1/31	13	2.2	5.8	1.3	4.3#	8
LOWER YELLOWSTONE (Greybull River)									
Timber Creek #2	9E3	8800	1/29	12	2.0	1.5	-	-	1
Wood River #2	9F15	8000	1/30	17	2.6	3.0	1.0	-	2
LOWER YELLOWSTONE (Shoshone River)									
Carter Mountain	-	-	1/28	15	4.0	-	-	-	-
East Entrance	10E6	7000	1/31	38	8.9	12.8	2.9	8.8#	8
Sylvan Pass	10E5	7100	1/31	42	10.1	14.7	4.1	10.9*	13
Tensleep Lake	7E26	9075	2/2	32	6.4	9.4	-	-	1
Tensleep R. S.	7E7	8300	2/1	26	4.9	6.6	-	-	1
Five Springs Falls	7E31	7500	1/30	14	2.6	4.6	-	-	1

*Average is for less than 15 years of record in the 1938-52 period.
#Average for period of record.

MONTANA SNOW SURVEYS - FEBRUARY 1, 1957

COLUMBIA BASIN DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENTS						Total Years of Record
			Date of Survey	1957		Past Record Water Content			
				Snow Depth (In.)	Water Content (In.)	1956	1955	15-Year Average 1938-52	
KOOTENAI RIVER (above Libby, Montana)									
Fernie	Can.	3500	2/1	31	7.3	8.5	6.1	6.2*	17
New Fernie	Can.	4100	2/1	45	10.9	12.9	8.5	11.4*	6
Marble Canyon	Can.	5000	1/31	45	13.7	12.7	7.1	11.9*	9
Nelson Creek	Can.	3050	1/30	41	10.5	16.5	7.7	9.8*	18
Sinclair Pass	Can.	4500	1/31	26	5.9	5.9	2.7	4.4*	9
Sullivan Mine	Can.	5100	2/1	38	8.2	15.0	5.2	10.1*	11
Gray Creek	Can.	5100	1/28	49	13.7	12.9	9.5	12.7*	8
FLATHEAD RIVER									
Basin Creek	13B14	5000	2/2	24	3.4	8.3	3.1	7.9#	6
Coyote Hill	13B10	4200	2/1	36	7.4	8.9	4.6	7.2#	10
Desert Mountain	13A2	5600	2/1	42	9.1	11.8	5.4	10.4#	10
Holbrook	13B13	4530	2/2	31	4.9	8.7	5.8	8.5#	6
Marias Pass	13A5	5250	1/30	44	12.2	13.3	6.4	11.8	22
Spotted Bear Mt.	13B2	7000	1/30	33	8.5	10.0	-	-	1
Trout Lake	13A12	3600	1/29	34	8.0	10.4	8.1	11.5#	4
Twin Creeks	13B11	3580	1/29	32	7.3	7.8	5.9	9.1#	6
CLARK FORK BASIN									
Coyote Hill	13B10	4200	2/1	36	7.4	8.9	4.6	7.2*	10
Chessman Res.	12C5	6200	1/31	10	1.2	4.0	1.3	3.3	21
Fish Lake, Idaho	21B4	5000	1/28	82	23.5	28.8	15.8	26.6#	5
Intergaard	13C4	6450	3/1	30	3.8	7.4	2.8	5.2#	12
Picnic Grounds	12C6	6500	2/1	19	3.3	5.5	1.6	3.5#	12
Pipestone Pass	12D1	7200	1/29	18	3.2	5.8	1.6	3.0*	17
Southern Cross	13C5	6500	2/1	22	4.0	5.8	2.4	4.1#	12
Storm Lake #2	13C7	7780	2/1	36	7.6	12.4	6.2	8.7#	4
Stuart Mill	13C6	6500	2/1	23	4.5	5.4	2.2	4.4#	12
Tenmile, Lower	12C2	6250	2/3	25	4.4	6.1	2.5	4.8	21
Tenmile, Middle	12C3	6800	2/3	31	5.8	9.6	3.6	7.0	22
Tenmile, Upper	12C4	8000	2/2	35	7.7	11.9	5.4	8.8	22
**Lookout	15B2	5250	1/30	65	19.7	37.5	14.7	22.4	20
TV Mountain	14B1	6800	1/31	48	11.2	-	-	-	-
Lubrecht Forest #6	13C8	5400	2/4	19	3.5	3.7	1.7	4.9*	5
BITTERROOT BASIN									
Gibbons Pass	13D2	7100	1/31	64	14.8	22.7	7.6	14.8*	17

*Average is for less than 15 years of record in the 1938-52 period.
**Adjacent Basin.
#Average for period of record.

VALLEY PRECIPITATION 1/

Division Averages and Departures
In Inches

DRAINAGE DIVISIONS	Sept.-Oct.-Nov.		December 1956		January 1957	
	Basin Avg.	Departure 2/	Basin Avg.	Departure	Basin Avg.	Departure 2/
COLUMBIA BASIN						
Upper Columbia, Canada	4.36	-3.72	4.90	+1.05	1.05	+2.70
Kootenai, Canada & U.S.	4.29	-2.55	3.58	+0.58	1.89	+0.19
Flathead	3.74	-1.78	2.11	+0.06	2.54	-1.01
Clark Fork	1.77	-1.54	0.83	-0.19	2.53	-0.74
Pend Oreille	5.72	-3.58	4.14	-0.10	2.35	-0.29

1/ Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Service of Canada and U. S. Weather Bureau.

2/ Departure from 15-year (1938-52) drainage division average.

STATUS OF RESERVOIR STORAGE
MISSOURI RIVER IN MONTANA
February, 1957

BASIN & STREAM	RESERVOIR	USABLE CAPACITY 1000's AF	THOUSAND ACRE FEET IN STORAGE ABOUT FEBRUARY FIRST 1957	1956	1955	15-Yr.Avg. 1938-52
MISSOURI RIVER BASIN						
Beaverhead	Lima	84.00	7.30	19.96	11.89	36.75*
Ruby River	Ruby	38.85		-	-	-
Madison River	Hebgen Lake	345.00	156.50	185.20	172.90	234.69
Madison River	Ennis Lake	41.00	38.10	32.53	38.01	34.06
Hyalite Creek	Middle Creek	8.03	28.30	3.38	4.71	4.28*
Missouri River	Canyon Ferry	2,043.00	1,589.00	1,526.00	1,224.00	-
Missouri River	Hauser & Helena	62.50	60.76	65.58	59.60	48.91*
Missouri River	Lake Helena	10.45	9.82	11.56	9.42	7.68*
Missouri River	Holter Lake	81.92	73.51	44.24	74.66	53.29
N. Fk. Sun River	Gibson	105.00	38.59	70.69	66.69	59.62
N. Fk. Sun River	Willow Creek	32.30	22.87	26.68	23.96	12.92
N. Fk. Sun River	Pishkun	32.00	16.97	16.58	19.29	15.58
Marias	Tiber	1,316.00	624.30	37.30	-	-
Birch Creek	Swift	30.00	21.18	22.70	26.96	19.50
Dupuyer & Birch	Lake Francis	112.00	89.96	92.36	95.31	72.77
Judith River	Ackley Lake	5.82		4.15	4.58	4.20
Missouri River	Ft. Peck	19,000.00	5,397.00	4,729.00	9,344.00	10,078.00
Milk River	Fresno	127.20	78.00	66.60	74.47	56.24
Milk River	Nelson	66.80	53.05	39.91	49.05	28.51
W. Rosebud Cr.	Mystic Lake	20.80	7.89	6.20	5.29	8.01
Red Lodge Cr.	Cooney	27.50		-	-	9.64*
Tongue River	Tongue River	73.90		-	8.60	9.95*
Swiftcurrent Cr.	Sherburne Lake	66.10		-	18.42	18.96
MISSOURI RIVER BASIN - WYOMING						
Shoshone River	Buffalo Bill	440.00	143.9	122.1	139.7	264.5
Wind River	Boysen	408.60	240.6	13.1	315.4	-
Wind River	Pilot Butte	31.6	9.2	14.6	14.7	14.5
Bull Creek	Bull Lake	152.00	76.0	62.3	63.1	63.6*
Belle Fourche	Key Hole	190.00	11.2	19.6	-	-
MISSOURI RIVER BASIN - NORTH DAKOTA						
Heart River	Heart Butte	54.80	44.0	45.0	50.6	56.7*
Heart River	Dickerson	4.30	3.1	2.6	2.5	4.0*
Missouri River	Garrison Lake	13,805.00	602.0	853.0	529.3	-
MISSOURI RIVER BASIN - SOUTH DAKOTA						
Belle Fourche	Belle Fourche	185.00	28.4	78.2	-	-
Cheyenne River	Angostura	160.00	25.4	74.9	-	-
Cheyenne River	Deerfield	15.1	7.6	9.9	-	-
Grand River	Shadehill	84.00	76.6	70.1	-	-
Missouri River	Ft. Randall	2,401.60	563.5	1,453.8	-	-

*Average is for less than 15 years of record in the 1938-52 period.

STATUS OF RESERVOIR STORAGE
COLUMBIA RIVER IN MONTANA
February, 1957

BASIN & STREAM	RESERVOIR	USABLE CAPACITY 1000's AF	THOUSAND ACRE FEET IN STORAGE			
			ABOUT FEBRUARY FIRST			15-Yr.Avg.
			1957	1956	1955	1938-52
COLUMBIA RIVER BASIN						
Flint Creek	Georgetown Lk	31.00	21.08	21.69	22.19	22.92
S. Fk.Flathead 5/	Hungry Horse	3,500.00	1,983.0	2,595.0	2,489.0	1,307.8*
Flathead River	Flathead Lake	1,791.00	996.7	858.2	788.8	721.7
Flathead River 6/	Camas Res.	42.80	29.22	34.34	38.94	17.77*
Flathead River 7/	Mission Valley	98.60	27.94	27.18	55.68	36.80*
Jocko Creek	Lower Jocko Lake	7.6	-	Snowbound		

5/ 4-year average

6/ Camas Reservoirs are shown as a sum of (4) small reservoirs on the west side of Flathead Lake located on Dry Creek and Little Bitterroot River.

7/ Mission Valley Reservoirs are shown as a sum of (8) small reservoirs located south and east of Flathead Lake. Both Camas and Mission Valley reservoirs are operated by the Indian Irrigation Service.

* Average is for less than 15 years of record in the 1938-52 period.

Federal - State - Private

COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
domestic and municipal water
supply, hydro-electric power
generation, navigation,
mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"